

1. A plant cell comprising a nucleic acid molecule encoding a chimeric isoprenoid synthase polypeptide that comprises an asymmetrically positioned homologous domain and that catalyzes the production of an isoprenoid reaction product that is not produced when said domain is positioned at its naturally-occurring site in an isoprenoid synthase polypeptide.

2. The plant cell of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes at least two different isoprenoid reaction products.

3. The plant cell of claim 1, wherein said chimeric isoprenoid synthase polypeptide is chosen from the group consisting of (a) the tobacco-*Hyoscyamus* CH4 chimeric isoprenoid synthase; (b) the tobacco-*Hyoscyamus* CH10 chimeric isoprenoid synthase; (c) the tobacco-*Hyoscyamus* CH11 chimeric isoprenoid synthase; (d) the tobacco-*Hyoscyamus* CH12 chimeric isoprenoid synthase; (e) the tobacco-*Hyoscyamus* CH13 chimeric isoprenoid synthase; and (f) the tobacco-*Hyoscyamus* CH14 chimeric isoprenoid synthase.

4. The plant cell of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an antifungal agent.

5. The plant cell of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an antibacterial agent.

6. The plant cell of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an antitumor agent.

7. A transgenic plant comprising a nucleic acid molecule encoding a chimeric isoprenoid synthase polypeptide that comprises a domain from a first isoprenoid synthase joined to a domain from a second, different isoprenoid synthase, whereby said chimeric isoprenoid synthase polypeptide catalyzes the production of an isoprenoid reaction product that is not produced in the absence of said domain from said second, different isoprenoid synthase, wherein:

(a) said first isoprenoid synthase catalyzes the production of an isoprenoid reaction product of said first isoprenoid synthase, but does not catalyze the production of an isoprenoid reaction product of said second, different isoprenoid synthase;

(b) said second, different isoprenoid synthase catalyzes the production of an isoprenoid reaction product of said second, different isoprenoid synthase, but does not catalyze the production of an isoprenoid reaction product of said first isoprenoid synthase;

(c) said domain from said first isoprenoid synthase occupies a first position in said chimeric isoprenoid synthase polypeptide, said first position in said chimeric isoprenoid synthase polypeptide corresponding to a position in said first isoprenoid synthase occupied by said domain from said first isoprenoid synthase; and

(d) said domain from said second, different isoprenoid synthase occupies a second position in said chimeric isoprenoid synthase polypeptide, said second position in said chimeric isoprenoid synthase polypeptide corresponding to a position in said second, different isoprenoid synthase occupied by said domain from said second, different isoprenoid synthase.

8. The transgenic plant of claim 7, wherein said chimeric isoprenoid synthase polypeptide catalyzes at least two different isoprenoid reaction products.

9. The transgenic plant of claim 7, wherein said domain from said second, different isoprenoid synthase comprises a ratio-determinant domain of said chimeric isoprenoid synthase polypeptide.

10. The transgenic plant of claim 9, wherein said ratio-determinant domain of said chimeric isoprenoid synthase polypeptide determines the ratio of isoprenoid reaction products of said chimeric isoprenoid synthase polypeptide.

11. The transgenic plant of claim 7, wherein said domain from said first isoprenoid synthase is from a plant isoprenoid synthase and said domain from said second, different isoprenoid synthase is from a plant isoprenoid synthase.

12. The transgenic plant of claim 7, wherein said chimeric isoprenoid synthase polypeptide is chosen from the group consisting of (a) the tobacco-*Hyoscyamus* CH4 chimeric isoprenoid synthase; (b) the tobacco-*Hyoscyamus* CH10 chimeric isoprenoid synthase; (c) the tobacco-*Hyoscyamus* CH11 chimeric isoprenoid synthase; (d) the tobacco-*Hyoscyamus* CH12 chimeric isoprenoid synthase; (e) the tobacco-*Hyoscyamus* CH13 chimeric isoprenoid synthase; and (f) the tobacco-*Hyoscyamus* CH14 chimeric isoprenoid synthase.

13. The transgenic plant of claim 7, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an antifungal agent.

14. The transgenic plant of claim 7, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an antibacterial agent.

15. The transgenic plant of claim 7, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an antitumor agent.